ESTONIAN UNIVERSITY OF LIFE SCIENCES
Institute of Veterinary Medicine and Animal Sciences

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PERIODONTAL DISEASE IN DOGS AND CATS; DIAGNOSING, TREATMENT, HOMECARE AND PREVENTIVE METHODS; OWNER AWARENESS, ATTITUDES AND BELIEFS

KOERTE JA KASSIDE PERIODONTAALHAIGUS: DIAGNOOSIMINE, KODUHOOLDUS JA PROFÜLAKTIKA - OMANIKE TEADLIKKUS, SUHTUMINE JA ARUSAAMAD

Final Thesis

Curriculum in Veterinary Medicine

Supervisors: Veterinarian Kadri Kääramees

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Periodontal disease is one of the most commonly found diseases in dogs and cats. This condition may proceed as subclinical for relatively long as it often lacks visible and clear clinical signs. As the field of veterinary dentistry is constantly developing and studies are done widely, the understanding of oral health and knowledge of oral and dental problems are fast spreading, not only among veterinarians but via education also among pet owners. Sharing knowledge and educating pet owners are duties of veterinary professionals. Promoting homecare and discussing the preventative methods to maintain oral health of the pets should be done on a daily basis in every veterinary clinic. In these days also anesthesia-free dental procedures are getting more popular but scientifically those methods are revealed to be more of a concern than actual health promoting care. Material collection occurred with an online questionnaire which was promoted to Finnish dog and cat owners mainly in Facebook. The questionnaire consisted of questions about dental homecare methods Finnish pet owners apply and on which extent, knowledge and awareness of clinical signs of dental/oral pathologies and required medical attention. Results reveal that 52.6% of dog owners and 76.8% of cat owners are not brushing their pet's teeth at any extent. With cats the main reason is that the pet doesn't allow brushing. Among dogs, lack of brushing is justified by the owners by using a lot of complementary products, 90.4% of dog owners are giving oral health promoting complementary products with some frequency. Associations were found between owners' assessment and pet's age and previous veterinary visits regarding oral complaints. The results were compared with similar studies performed in Estonia in 2018 and 2019.

Keywords: Periodontal disease, prevention, homecare, oral health, dog, cat

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Periodontaalhaigus on koertel ja kassidel üks sagedamini esinevaid haigusseisundeid. Haigus võib suhteliselt kaua subkliiniliselt süveneda, kuna sageli võivad puududa hästi nähtavad ja selged kliinilised sümptomid. Veterinaarstomatoloogia valdkonna pideva arengu ja teadusuuringute lisandumise taustal levib teadmus suuõõne probleemidest ja suuõõnetervise parem mõistmine kiiresti mitte vaid loomaarstide ridades, vaid tänu loomaomanike harimisele ka nende hulgas. Oma tadmiste jagamine ja loomaomanike harimine on üks loomaarstkonna kohustusi. Igas väikeloomadega tegelevas loomaarstipraksises tuleks igapäevaselt tegeleda ka suuõõne tervise ennetusmeetodite alase teabe jagamise ja hammaste koduhoolduse propageerimisega. Tänapäeval koguvad populaarsust ka nn. ilma anesteesiata teostatavad hambaprotseduurid, kuid teadusinfo põhjal on nende näol tegemist pigem problemaatilise, mitte tegelikult tervist toetava teenusega. Andmed koguti internetiküsitluse kaudu, millele vastama kutsuti Soome koera- ja kassimomanikke; küsitlust levitati peamiselt Facebooki keskkonnas. Küsimused hõlmasid Soome lemmikloomaomanike poolt kasutatavaid lemmikute hammaste koduhoolduse meetodeid, nende kasutamise ulatust, omanike teadmisi ja teadlikkust suuõõne patoloogiate kliiniliste tunnuste ja veterinaarse abi vajaduse osas. Tulemused näitavad, et 52,6% koeraomanikest ja 76,8% kassiomaikest ei harja oma lemmikute hambaid üldse. Kasside puhul tuuakse peamiseks põhjuseks see, et loom ei lase harjata. Koerte puhul põhjendatakse mitteharjamist erinevate suuõõne tervist toetavate toodete kasutamisega, kusjuures 90,4% koeraomanikest annab oma lemmikule erineva sagedusega suuõõne tervist toetavaid tooteid. Leiti seoseid omanikepoolse lemmiku suuõõne tervise hinnangu, lemmiku vanuse ja varasemate loomaarstikülastuste vahel suuõõnega seostuvate kaebuste tõttu. Tulemusi võrreldi Eestis 2018. ja 2019. aastal läbi viidud sarnaste uuringute tulemustega.			
Märksõnad: periodontaalhaigus, prevention, koduhooldus, suutervis, koer, kass			

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INTRODUCTION

Periodontal disease is one of the most common health issues among dogs and cats (Stella et al., 2018; Özavcia et al., 2019; Niemiec et al., 2020). Periodontal disease is progressive and causes major discomfort to the animal suffering from this condition. It has been found that by the age of 2, almost 90% of pet animals suffer from periodontal diseases of some extent, especially small and toy breed dogs are affected and the incidence increases in older animals. Periodontal disease ranks in top two or three disorders affecting dogs (Stella et al., 2018). As veterinary medicine advances the knowledge regarding the periodontal disease, its pathophysiology and means of prevention are becoming more detailed. In prevention of periodontal diseases homecare plays a major role, but Comprehensive Oral Health Assessment and Treatment (COHAT), also called a professional dental cleaning, is an essential part as well (Niemiec et al,. 2017). The importance of dental homecare, dental diseases and the pain those diseases cause, have been, and still are, easily underestimated among pet owners (Watanabe, 2016; Bellows et al., 2019). This might be due to the lack of obvious clinical signs of ongoing dental pathologies. When it comes to prevention and homecare, there are many possibilities; tooth brushing, antiseptic gels and rinses, bones or chews, diets and water additives (Niemiec, 2013). The gold standard of prophylaxis is considered to be tooth brushing (Harvey et al., 2015).

1. LITERATURE REVIEW

1.1. Periodontal disease

Periodontal disease is a progressive disease which begins with gingivitis and if not treated may develop into periodontitis. (Bellows et al., 2019; Niemiec et al., 2020). However Harvey (1998) has written that instead of being progressive, periodontal disease has periods of active advancement separated by periods of relative stability. Gingivitis, inflammation of gingiva, is the initial, reversible stage of the disease caused by the bacteria and microorganisms in dental plaque (Niemiec et al., 2020). Plaque consists of bacteria, glycoproteins, epithelial and inflammatory cells and extracellular polysaccharides that accumulate on the tooth (Lowe and Anthony, 2020). The most common bacteria in the oral cavities of dogs and cats are *Porphyromonas gingivalis*, *Prevotella nigrescens* and, *Porphyromonas gulae* (Özavci et al., 2019). As plaque matures, an organized biofilm which contains organic and inorganic material is formed and if plaque is not removed it will harden and form dental calculus. Dental calculus is primarily composed of calcium phosphate minerals from saliva and non-viable plaque microorganisms (Lowe and Anthony 2020). Gingivitis is the outcome of bacterial accumulation in the gingival sulcus. Gingivitis can be prevented and reversed with a thorough dental prophylaxis and intensive homecare (Niemiec et al., 2020). When gingivitis is not treated it may progress into irreversible periodontitis which is an inflammatory disease of deeper supporting structures of tooth (DeBowes, 2010). In order to prevent periodontitis the plaque accumulation must be controlled (Harvey et al., 2015). Microorganism induced inflammation in periodontal ligament, cementum and alveolar bone leads to progressive destruction of these tissues and ends in an attachment loss. Clinically this can be detected as the gingiva recedes, periodontal pockets are formed or both (Niemiec et al., 2020). Periodontal disease may lead to systemic pathologies besides the local concerns (Marshall et al., 2004; Niemiec et al., 2020) and it has been linked with renal, hepatic and cardiac disorders (Rawlinson et al., 2011; Gorrel, 2013; Semedo-Lemsaddek et al., 2016). Locally seen complications are for example oronasal fistulas which form abnormal connection between nasal and oral cavity (Lobprise, 2000). These fistulas are most commonly seen in maxillary canine teeth with advanced periodontitis on palatal side but all maxillary teeth can be affected

(Niemiec, 2018). Small breed dogs have been reported to have more dental calculus, gingivitis, furcation exposure and attachment loss and an earlier onset of the periodontal disease than large breed dogs (Marshall et al., 2014; Bellows et al., 2019). Small breed dogs are also predisposed for perio-endo abscesses in multirooted teeth which are caused by excessive periodontal loss allowing bacteria to enter the endodontic system (Niemiec, 2008). Other often seen local pathologies probably caused by or at least contributed by periodontal diseases are mandibular fractures, retrobulbar abscesses, blindness, oral cancer, osteomyelitis and osteonecrosis (Niemiec, 2008; 2013).

1.1.1. Diagnosing periodontal disease

Periodontal disease is often underdiagnosed, mostly due to lack of clinical signs but also due to lack of education (Niemiec et al., 2020). Because of these reasons, the treatment and therapy often comes very late in the course of disease. Clinical signs of gingivitis include gingival ertythema, edema and halitosis (Bellows et al., 2019; Niemiec et al., 2020). Excessive gingival bleeding during probing, brushing or chewing may be observed before other changes are present (Niemiec, 2013). In normal, healthy oral cavity, there should not be visible plaque or calculus. A general anesthesia is required for proper diagnosing of periodontal disease (Stella et al., 2018). The hallmark sign of periodontitis is apically progressive attachment loss of teeth which is presented as gingival recession with possibly normal probing depth or alternatively, normal gingival margin level with periodontal pocket formation. In case nothing is done to treat the ongoing disease it will progress until the tooth is exfoliated. After exfoliation the inflammation decreases but the bone loss is permanent (Niemiec et al., 2020).

1.1.2. Prevention of periodontal disease

In prevention of periodontal disease, pet owner education is crucial. Preventive homecare can be divided into three strategies; mechanical, chemical and combination of both (Bellows et al., 2019). Owner education and prevention should start as early as possible, preferably already at the first visit for veterinary clinic. At the first visit a complete oral examination should be performed (Bellows et al., 2019). The first examination should include evaluation of the deciduous dentition, pointing any missing, unerupted or slow to erupt teeth, evaluation of the occlusion and jaw length as well as noticing teeth that are in contact with other teeth

and may need extraction (Bellows et al., 2019; Niemiec et al., 2020). At this point owners should be taught how start familiarizing their pet allowing their teeth to be examined and to accept handling. After the eruption of permanent teeth it is critical to look for retained deciduous teeth and to evaluate the need for extraction. Early extraction of persistent deciduous teeth may help to prevent displacement of permanent teeth and possible development of periodontal disease due to crowding (Bellows et al., 2019). If at this point a permanent tooth is found to be clinically missing intraoral radiographs should be taken to identify possible non erupting and potentially problem causing teeth (Niemiec 2010).To avoid negative experiences, tooth brushing as homecare should not be started before the permanent teeth have erupted since as the deciduous teeth are exfoliating it might be painful and cause discomfort. Owners of small breed dogs or cats as well as owners of brachycephalic breeds should be informed that it is very likely that they need to pay more attention to their pets' dental care than an average pet owner. First proper dental prophylaxis including scaling, polishing and radiographic examination should be performed at around 1 year of age in small breeds and at 2 years of age in larger breeds (Bellows et al., 2019).

1.2. Conscious oral evaluation

Oral examination starts with a conscious animal. Visible calculus, gingival erythema and halitosis can be detected if the animal is cooperating. In American Animal Hospital Association's (AAHA) dental care guidelines for dogs and cats (2019) it is stated that: 'In many instances, the examiner will underestimate the presence of disease during conscious evaluation'. Occlusion, pain in temporomandibular joints, discoloration of teeth, missing teeth, extra teeth, fractured teeth and drooling may also be detected on a non-sedated animal (American Veterinary Dental College, 2018). Avoiding anesthesia in dental patients may lead to incorrect or missed diagnoses and delayed treatment, resulting in prolongation of pain and progression of oral/dental disease(s) (Nemec et al., 2019). For appropriate dental examination, proper periodontal probing should be performed but the animal needs to be anesthetized. 'Periodontal probing for pockets or furcation exposure or dental probing to evaluate for pulp exposure or tooth resorption should never be performed on an awake patient', is written in AAHA dental care guidelines. 'Anesthesia-free dental procedures often contribute to poor animal welfare, as such procedures may actually contribute to tissue damage and discomfort and pain to the animal without a meaningful result', state Nemec et al. (2019).

1.2.1. Anesthesia free oral procedures

In anesthesia free dental procedures the teeth are only cleaned, scaled and polished without further diagnosing of oral pathologies. Because this procedure is intended to only clean the visible surface of the teeth, it provides the pet owner with a false sense of benefit to their pet's oral health (American Veterinary Dental College, 2018; Nemec et al., 2019). In sense of improving oral health, resolving gingivitis and preventing periodontal disease, removal of subgingival calculus is crucial. Removal of supragingival calculus alone is purely cosmetic and ineffective in treating disease (Bellows et al., 2019). In a conscious animal patient cleaning of gingival pockets is impossible due to the unpleasantness and painfulness of the procedure. Due to major challenges in cleaning critical parts of the dentition and the lack of diagnosing possibilities, these non-anesthetized procedures should never replace professional COHAT procedure that includes complete oral health assessment, sub- and supragingival dental scaling, polishing and intraoral radiographs (American Veterinary Dental College, 2018).

1.3. Oral evaluation of anesthetized animal

Comprehensive oral health assessment is always performed with animal under general anesthesia (Bellows et al., 2019; Nemec et al., 2019; Niemiec et al., 2020). Comprehensive examination includes a tooth-by-tooth visual examination, probing, mobility assessment, radiographic examination and recording findings on chart (Bellows et al., 2019). It is essential for the veterinarian to be aware that an anesthetized oral examination with intraoral radiography is necessary for complete assessment of oral health (Bellows et al., 2019; Niemiec 2010). Excluding intraoral radiography, the complete magnitude of disease is easily underestimated, which may lead to unsuitable treatment choices and missing painful disease conditions (Bellows et al., 2019). Without radiographic examination one will miss the ongoing conditions which are not readily visible with naked eye. Overtreatment of coincidental findings in oral radiographs might be a marginal risk but clinically more relevant findings can only be recognized from radiographs (Verstraete et al., 1998).

1.3.1. Comprehensive Oral Health Assessment and treatment

Proper dental prophylaxis is always done in general anesthesia. The patient is intubated to prevent any aspiration and often also a pharyngeal pack is used to absorb any excess water which could enter the trachea (Bellows et al., 2019; Niemiec et al., 2020). The oral examination starts with a visual inspection of the whole oral cavity. The oral cavity should be inspected systemically and in detail. All the findings should be recorded. The tactile examination is done in two phases; first the teeth are examined thoroughly with dental explorer to recognize any defects such as tooth wear, resorption, caries, pulp exposure or enamel defects (Niemiec et al., 2020). Secondly a periodontal probe is used to evaluate tooth root furcation exposure and subgingival sulcus or pocket formation (Bellows et al., 2019; Niemiec et al., 2020). Knowledge of correct dental anatomy is essential to reach a proper diagnosis.

1.4. Homecare

The pet owners have to be convinced of the benefits of routine homecare. This education and training should start from the first visit at a veterinary clinic and it should come from the whole staff (Niemiec et al., 2020). The goal of dental homecare is decreasing the amount and accumulation of plaque on the teeth which in turn reduces the risk and incidence of gingivitis and thus also further more severe stages of periodontal disease. However, it is important to keep in mind that it is primarily the plaque and bacteria within the gingival sulcus – under the gum line – and immediately adjacent to the gingival margin, that cause the problems, not the visible calculus further away supragingivally, on the crown (Niemiec, 2020). Dental homecare may consist of many different methods and it is divided into two groups; active and passive.

1.4.1. Active homecare

Active homecare means that pet owner actually does something to actively reduce bacteria and plaque accumulation on the teeth of their pet. Active homecare includes brushing and using toothpastes and barrier sealants (Niemiec, 2013). Barrier sealants form a layer on top of the teeth which reduces accumulation of bacteria and plaque (Niemiec, 2020).

1.4.1.1. Brushing

Tooth brushing, if properly performed, is proven to be the most effective way to prevent plaque formation and therefore it should be promoted by all veterinarians (Hale, 2003). Decent brushing is the only way to reach in to shallow gingival pockets at least for some extent and thus reduce gingivitis and incidence of periodontal disease (Niemiec et al,. 2020). Tooth brush should be chosen according to the pet that it is used for. There are numerous variations of different brushes on the market. For some pets the ones designed for animals are the best choice but for some others the brushes designed for human babies might provide a better solution (Niemiec, 2013). In humans electrical tooth brushes are proven to be more effective eliminating plaque compared to manual ones (Elkerbout et al., 2020). In animals there are no studies done, but it might reasonable to expect that results could be similar. Using a powered tooth brush for animals is probably a bit more challenging due to the vibration and the noise of the brush. Animals have to be well trained to allow a powered tooth brush to be used (Niemiec et al., 2020). It should be noticed that both lingual and buccal surfaces of the teeth have to be brushed equally (Harvey et al., 2015).

1.4.1.2. Pastes, rinses and barrier sealants

Using tooth paste formulated for pets may help the pet to accept teeth brushing as these pastes usually taste good. These products usually contain a calcium chelator which has been shown to decrease the level of calculus deposits on the teeth (Niemiec et al., 2020). As the visible plaque and calculus on the tooth crown are known not to cause problems as much as the bacterial accumulation immediately next to and under the gumline, the effect of tooth paste used without brushing is not very significant when consideringing the oral health (Niemiec et al., 2020). Products designed for humans should not be used as they may contain detergents and fluoride which may cause gastrointestinal problems or, if swallowed, fluorosis (Niemiec, 2008). Disinfecting rinses, traditionally chlorhexidine containing products are considered to be more effective comparing to pastes as they reach within the gingival pockets better when used together with brushing (Hennet, 2002). An additional benefit of chlorhexidine products is that they maintain antiseptic effects for up to 7 hours after application (Cousido et al., 2009). The lack of palatability is one debilitating feature of these rinses and that may make it unpleasant to use it for pets at home (Niemiec et al., 2020). Products containing soluble zinc salts offer a solution free of unpleasant taste for active home care. Formation of plaque and

development of gingivitis are proven to be decreased by the use of one veterinary product containing zinc ascorbate (Clarke, 2001). Using rinses is easy as the amount of substance needed is relatively small. Ideally, rinses should be applied directly to the surface of the teeth and gingiva. Unfortunately, in most cases, getting the solution between the cheek and teeth is the best a client can achieve and thus the use of rinse is not that effective (Niemiec et al., 2020). There is still one more application for active homecare; veterinarian-applied barrier sealants. These products are shown to decrease accumulation of plaque and thus they also prevent formation of calculus (Niemiec et al., 2020). As one barrier sealant product forms hydrophobic surface on the teeth, the other has hydrophilic polymer which forms pores that allow water and oxygen passage in the gingival sulcus at the same time as plaque formation is effectively deceased (Genler, 2005; Sitzman, 2013). Barrier sealants are professionally used among veterinarians after COHAT procedure in anesthetized animals to prevent accumulation of plaque (Bellows, 2016).

1.4.2. Passive homecare

Passive homecare doesn't require active involvement of the pet owner. Passive homecare includes feeding dental health supporting pet food, giving dental treats or chews and using water additives. When looking for knowledge about foods or treats that have proven effect on dental health, one should visit the website of Veterinary Oral Health Council (VOHC). The VOHC provides a list of products that meet their standards of effectiveness in controlling dental plaque and calculus accumulation in dogs and cats (Niemiec et al., 2020). Products listed in VOCH can be assured to be effective in contributing oral health thus decreasing accumulation of plaque and calculus. 'The VOHC awards a Seal of Acceptance for two categories: helps control plaque and helps control tartar, and furthermore, to obtain VOHC approval, the product must also be a safe consistency for the patient to chew and not damage the teeth' (Niemiec et al., 2020).

'Passive homecare alone will not be able to maintain clinically healthy gingiva and is only a part of the plaque control regimen' is written in WSAVA dental guidelines. On the other hand, passive homecare doesn't require that much involvement of the animal owner so it is more likely that these methods are used at home. This is an important point since the long term management is the key factor when discussing oral health management at home (Ingham and Gorrel, 2001). Surprisingly, one study showed that passive homecare may be even more beneficial compared to active homecare simply due to the fact that it actually is performed

(Vrieling et al., 2005). Feeding dental health supporting kibble or giving dental treats should always be combined with regularly performed professional dental prophylaxis under anesthesia. As these products are able to reduce the visible calculus on the teeth, it is important to remember that the calculus itself is not pathogenic and visibly clean teeth don't necessarily guarantee that the oral health is good. In studies done by Verstraete et al., 1996; Clarke and Cameron, 1998; Steenkamp and Gorrel, 1999, wild carnivores had significantly cleaner teeth compared to their domestic counterparts but the level of periodontal disease was similar. So when recommending dental care products for pet owners, veterinarians should focus on promoting products that are able to clean beneath the free gingival margin (Niemiec et al., 2020). Combining active and passive homecare is the best solution when one wishes to get the best possible benefit out of the dental homecare. Dental chews clean superiorly the teeth used for chewing and in contrast, active homecare is superior for the incisor and canine teeth (Niemiec et al., 2020).

1.4.2.1. The effect of diet on dental health

These days there are many ways to feed pet animals and the recommendations differ a lot between different sources. The impact of diet regarding to dental health has been studied to some extent. In these studies the focus has been in comparing wet, dry and homemade diets. Different types of diets can have differing effects on production of saliva and its composition, metabolism of plaque bacteria and accumulation of calculus (Niemiec et al., 2020). It is a common hypothesis that dry kibble eating pets have cleaner teeth and thus better oral health. It is true that dry food leaves fewer residues in the oral cavity compared to wet diets but still many animals fed on commercial dry diets have massive plaque and calculus accumulations and also periodontal disease (Logan et al., 2006). Watson found in his study in 1994 that pets eating soft food had more plaque and gingivitis compared to pets eating fiber rich food but Boyce and Logan (1994) and Harvey et al. (1996) showed that dry and wet food resulted in similar accumulations of plaque and calculus. Comparing homemade food and commercial pet food in a study made by Buckley et al. (2004) showed that homemade diet increased risk of oral health problems in cats. Gawor et al. (2006) found out that feeding dry food for cats improved periodontal disease situation and decreased accumulation of calculus compared to cats fed with soft or homemade food.

1.4.2.2. Dental diets, treats and chews

On the market there are several different commercial pet foods claiming to support oral health. The effects of these products are based on larger kibble size and the inclusion of fiber which abrades the surface of the teeth (Niemiec et al., 2020). Ideally, when chewing the tooth should sink completely into the kibble before the kibble piece breaks down, to clean the tooth effectively. Feeding dental food helps to keep the teeth visibly clean but according to Logan et al. (2002) only one diet has published evidence to actually have a positive effect on gingivitis. A six-month study comparing feeding this dental diet to a typical maintenance diet revealed approximately 33% reduction of plaque accumulation and gingivitis with dental diet. These diets have usually high fiber content and are not recommended for use in growing or lactating animals (Niemiec et al., 2020). To maintain oral health by feeding dental food one should mainly feed the animal with that particular food. Using a dental diet simply as a treat will not meet expectations for the product (Hale, 2003). Dental treats have not shown to be beneficial regarding prevention of periodontitis (Roudebush et al., 2005). However, dental chews listed in VOCH are proven to be effective in plaque and calculus control which in turn reduces gingivitis and periodontitis in dogs. Dental chews containing cellulose decreased the clinical signs of periodontal disease in study made by Beynen et al. (2010). Gawor et al. (2018) found that brown algae, *Ascophyllum nodosum*, can improve oral health. There are no VOCH listed dental chews for cats but there are four different dental health promoting treats listed for them. A down side of dental chews and feed is the fact that canine teeth and incisors are not cleaned effectively by them because they are not used for chewing.

Giving a dental chew bears risks as the chew may cause esophageal obstruction (Leib and Sartow, 2008), tongue entrapment (Rubio et al., 2010) or gastrointestinal problems. Exceptionally hard chews as antlers or hooves may lead to tooth fracture, thus these products should be avoided in some extent. The most common teeth, to fracture are the fourth maxillary premolar teeth which is in increased risk when dogs are routinely given hard treats and toys (Soltero-Rivera et al., 2019). The median force before the teeth fractures was found to be 1,28 N (Newton) in the study done by Soltero-Riviera et al. (2019).

1.4.2.3. Water additives

Clarke (2006) found in his study that xylitol additive in drinking water was able to reduce plaque and calculus accumulation in cats. Using xylitol is, however, found questionable by

some as it may cause severe hypoglycemia in dogs in high concentrations. That said, in veterinary products, the xylitol concentration is low and has been proven to be safe for healthy dogs when used at the recommended dose (Anthony, 2011). There are five listed water additives in VOCH website for dogs and three for cats.

2. AIMS OF THE STUDY

Aim of this study was to explore the state and habits of oral homecare in dogs and cats in Finland and to find out the preferred homecare methods pet owners use to maintain their pet's oral health. We also wanted to discover whether people are brushing their pets' teeth, why or why not and if they do, how often. Finnish pet owners attitudes towards dental homecare generally and the beliefs they have about pets dental prophylaxis were also examined. Owners' knowledge and awareness of different dental and oral problems were studied as well. One subject of interest was also to perhaps discover specific risk factors associated with the unfavorable condition of pet's oral health status as evaluated by the owner. Results of this study were also compared with a similar study carried out by Hietakangas (2019) involving Estonian pet owner population.

The aims of the study were:

- To find out whether Finnish pet owners are performing any kind of dental/oral homecare for their pets, which methods are they using and how often?
- Are pet owners aware of the importance of dental homecare?
- Do pet owners recognize the danger of using only anesthesia-free dental cleaning instead of a professional COHAT- procedure?

3. MATERIALS AND METHODS

3.1. Data collection via questionnaire

The material collection for this study was made with an online questionnaire (Appendix 1). The questionnaire was created in www.questionpro.com and promoted in Facebook groups mainly. These groups were 'Koirat' ('Dogs'), the members are dog owners, 'Kissat' ('Cats'), the members are cat owners, 'Vapaasti ulkoilevat kissat' ('Freely outgoing cats'), the members have cats who are allowed to go out freely. Pet owners were able to fill the questionnaire during the period from 20.09.2020 to 23.03.2021. Questionnaires were filled independently by the owners and they were able to stop answering and exit the questionnaire any time if they wanted. In the beginning of the questionnaire, a short introduction about the purpose of the questionnaire was provided. People filling the questionnaire were informed that they will stay anonymous and the results will be used for final thesis of veterinary medicine student.

The questionnaire was designed to be similar as the one used to collect information in Estonian pet owners study to enable better comparison of the data. Information about pets, history of dental or oral problems, previous dental treatments and procedures, usage of conscious dentistry, preferred homecare products and tooth brushing were collected. There were also questions about their pet's oral health, changes seen in the pet's mouth (as assessed by the owner), the source where the owners would like to get information about pet oral health from and whether they need or desire more information regarding to pet oral health.

3.2. Data handling

All together we got 651 completely filled questionnaires. Data was entered into Microsoft Office Excel. All the answers were assigned a numerical value. If there were 'incomprehensible' answers, only those answers were discarded. An incomprehensible answer was for example an answer written in text when a numerical value was asked for or answers regarding more than one animal within the same questionnaire. There were no completely

discarded questionnaires. Data cleaning was performed after entering all the data into the Excel spread sheet.

3.3. Statistical analysis

Figures showing descriptive statistics were done using Microsoft Excel 2010. To evaluate associations between owner assessments of pet's oral health status and certain possible variables that may have an influence in owner evaluation, a logistic regression analysis was used. As a dependent variable we used owner assessment of pet's oral health status (good = 1, moderate= 2 bad = 3). Included independent variables were animal species (dog or cat), age in years, history of previous visits to clinic for oral problems, teeth brushing, and desire to gain more information about oral health. Odds ratio (OR) was calculated with 95% confidence interval (95% CI). Stepwise backward elimination procedure was used for final model and confounding and interactions of species with other variables were checked. In statistical analysis 651 completed questionnaires were used. Statistical significance level was set to $p \leq 0.050$.

Statistical analysis was done with statistical software Stata/IC 14.2 (StataCorp LP, College Station, Texas, USA).

4. RESULTS

4.1. Basic information

For this study we used all the gathered 651 questionnaires filled by pet owners. In some questionnaires the number of answers received differs from the complete amount due to misunderstandings or incomplete answers. In some questions was possible to choose more than one answer and the number of answers for open questions was not limited.

Of all started questionnaires, 78% (n = 590) were regarding dogs and 22% (n = 170) were regarding cats. Average age of cats was 7.5 years and average age of dogs was 6 years. The percentage of dogs up to 3 years old was 32% and 68% were more than three years old. In 2 questionnaires the age of cat was not recorded.

Mean weight of dogs was 19.5 kg and in cats 4.7 kg. In cats 76% weighed up to 5 kg and 24% were over 5 kg. Weight of 3 of cats was not recorded. Of all dogs 6% weighed less than 5kg, 27% were from 5 kg to 10 kg, 35.7% from 10 kg to 24.9 kg and 31% were over 25 kg. In 2 of dogs weight remained unknown. Majority of the pets were assessed to a have normal body condition (89%), 2% were underweight and 10% were overweight according to the owners.

When asking the reason for the latest visit at veterinarian, two of the most common reasons were vaccination / general health check (26%) and oral or dental problems (24%).

4.2. Brushing

Majority of pet owners (58%) are not brushing their pet's teeth for several reasons; pet doesn't allow brushing (24%), brushing pet's teeth is not considered necessary nor beneficial to the health of the pet by the owner (20%), nobody has advised to brush pet's teeth (15%), owner has no time or is unable to brush the teeth due to physical limits (11%). Of all the owners 30% told they don't brush the teeth 'for another reason'. In table 1 distribution of answers between dog and cat owners is illustrated.

Table 1. Percentages of owners not brushing their pet's teeth.

	Dog (n = 590)		Cat (n = 168)	
	n	%	n	%
Not brushing	287	48.6	121	72
Used to brush but not anymore	25	4.2	8	4.8
Total (not brushing + not brushing anymore)	312	52.9	129	76.8

Of all the owners 7% are brushing their pet's teeth at least once a day, 12% brush a couple of times during 7 days and 23% brush their pet's teeth more seldom than a couple of times within a week.

If the owner was brushing their pet's teeth, we also asked where they received information and advice regarding their pet's oral and dental health motivating them to brush from. The most motivating source was a veterinarian (30%), 21% got the motivation from internet, 17% from other pet owners and 10% from literature. The rest of the owners (21%) received the motivating information from a pharmacy, pet stores, a breeder, from television / magazines or from somewhere else.

From the owners who were not brushing their pet's teeth their reasons for that were asked. There was a surprising difference between the reasons given by cat owners versus dog owners. The main reason for cat owners is that the pet doesn't allow brushing. For dog owners, major reason for not brushing was given as something else than the pre-written offered answer choices. Dog owners stating the reason for not brushing as 'something else', most often elaborated that they feed their pets raw bones. Number of dog owners thinking that tooth brushing is not necessary is alarmingly high (24%). Luckily only 12% of cat owners think the same.

Table 2. Reasons for not brushing or not brushing anymore in dogs and cats.

	Dogs (n = 291)		Cats (n = 125)	
	n	%	n	%
Pet doesn't allow	41	14.1	58	46.4
Human unable	39	13.4	7	5.6
Owner thinks not necessary	69	23.7	15	12.0
Has not received an advice	39	13.4	23	18.4
Other reason	103	35.4	22	17.6

4.3. Use of complementary products

The questionnaire also queried whether the owners are giving their pets any oral health supporting complementary products. Overall, 33% of pets were receiving some kind of oral health promoting products daily. These products were given to 29% of pets a couple of times a week, 19% were having these products less frequently than a couple of times a week. For 19% of pets any specific dental health supporting products were not given. Generally, Dogs are given clearly more complementary products compared to cats (Table 3.), simply because the owners have not been advised to offer dental health promoting products for cats but also because cat owners think it is not necessary.

Reasons for not offering the pet any dental health promoting products were the following: I haven't been advised to give these products to my pet (31%), Offering these products is not necessary nor beneficial for the pet (27%), these products are not tolerated by my pet (16%), these products are too expensive (4%). 22% had another reason not to give these products.

Table 3. Use of complementary products in dogs and cats.

	Dogs (n=563)		Cats (n=163)	
	n	%	n	%
Complementary products given daily	219	38,9	23	14,1
Complementary products given a couple times a week	189	33,4	20	12,3
Complementary products given but less often	100	17,8	35	21,5
Complementary products not given	54	9,6	85	52,1

The most popular products used for dogs were dental chews and treats (86%). Feed additives were in use in 6% of dogs and 3% of owners used dental/oral gels or rinses for their dogs. Only 1% of dogs were eating dental health promoting diet and 3% of dogs are getting some other type of dental health promoting products (Figure 1). In this question pet owners were able to pick as many answers as they wanted.

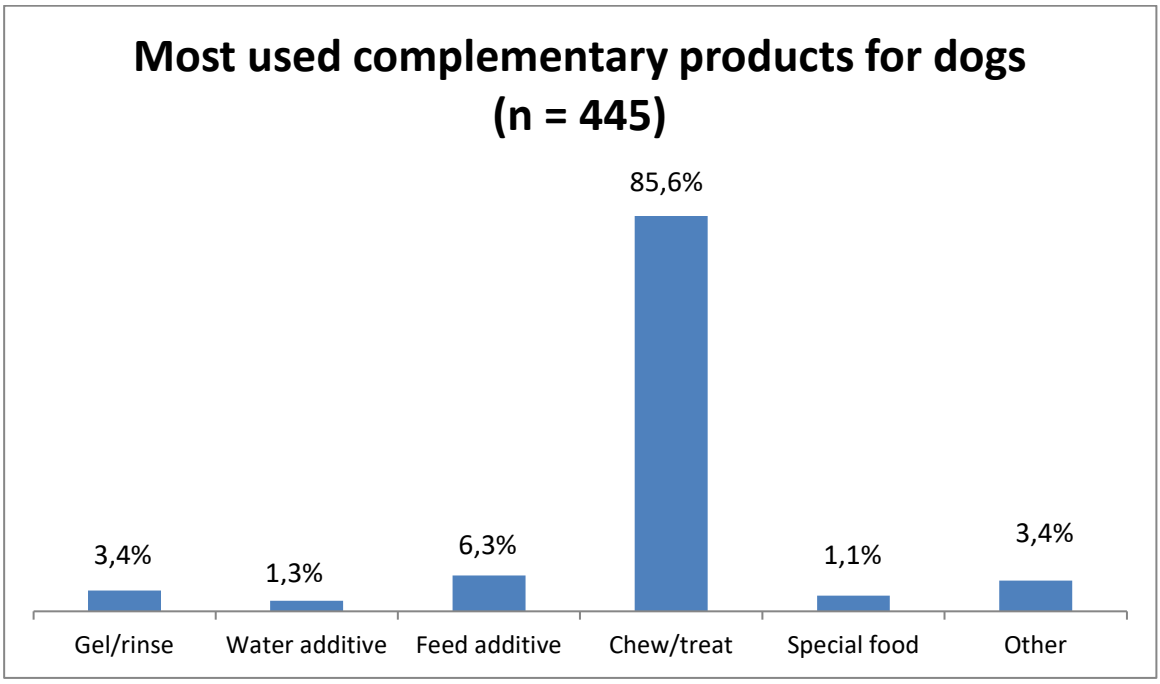

Figure 1. Most used complementary products for dogs.

For cats the results were rather different. Almost half of cats (46%) are not getting any complementary products and mostly because the owners are not advised to do so (Figure 2). Some owners claimed they didn't even know cats have such products available.

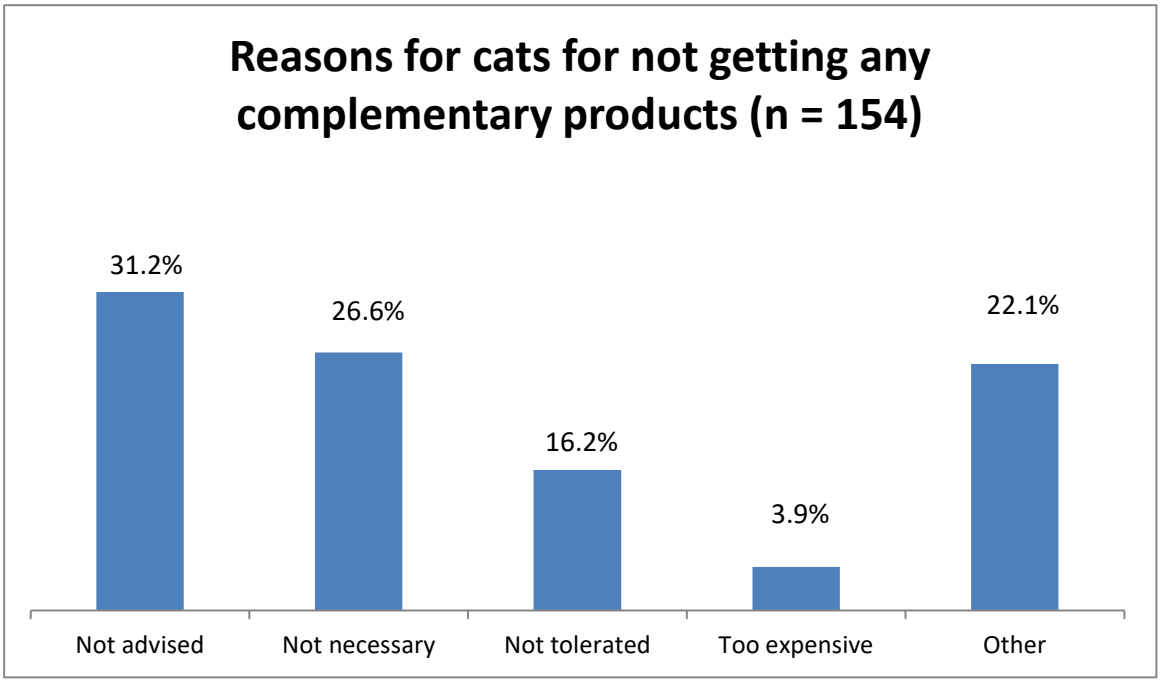

Figure 2. Reasons for cats for not getting any complementary products.

People like to buy complementary products mainly from pet stores (45%). Products available in supermarkets were the second popular (30%). Online shops were the first choice for 10% of pet owners. Only 8% purchases these products from veterinary clinic and 3% from pharmacy. The rest 5% of owners buy the products from somewhere else.

4.4. Gaining knowledge of dental health promoting products

According to this questionnaire, majority of pet owners (78%) say a veterinarian is the most reliable source to find new information regarding their pet's oral health, however, only 18% of pet owners decide the products they use based on the knowledge gained from veterinarians. In sources where to look for information about beneficial products, a veterinarian narrowly wins over the internet (30% vs. 29% of owners). Other pet owners were the source of information for 14% of the owners.

4.5. Statements concerning pet's oral health

The questionnaire ended with general statements regarding pet oral health, prevention of periodontal disease, necessity of veterinary attention in certain conditions and safety and benefit of anesthesia-free dental procedures. Owners were inquired if they agreed with the statements or not. The results between dog and cat owners are quite similar, as seen in table 4. Owners were well aware that calculus free dentition doesn't automatically mean that the mouth of the pet is healthy. Only 17.5% of dog owners stated that clean mouth means healthy mouth, 21.8% of cat owners agreed with that. Surprisingly only 3.0% of dog owners and 4.9% of cat owners agreed that bad smell is normal in pet's mouth. Cat and dog owners are well aware that a broken tooth requires veterinary attention always (98.6% and 99.6%). Brushing is known to be the best prevention against gingival diseases among 87.4% of dog owners and 80.3% of cat owners (Table 4).

Table 4. Owner awareness about pet oral health; numbers and percentages of owners agreeing that the statements are correct.

	Dog (n = 498)		Cat (n = 142)	
	n	%	n	%
No calculus means everything is okay with mouth and teeth	87	17.5	31	21.8
Bad smell is normal in pet's mouth	15	3.0	7	4.9
Daily brushing is the best prevention against gingival diseases	435	87.4	114	80.3
A broken tooth requires veterinary attention	496	99.6	140	98.6
Awake dentals are beneficial and safe for a pet	107	21.5	38	26.8

Notes:
1. Symbol "n" tells the number of owners who agreed to the specific statement in the table.
2. Symbol "%" tells the percentage of owners agreeing to the statement and is calculated by positive answers from all received answers.

4.6. Owner assessment of their pet's oral health status

Owners were asked to evaluate the condition of their pet's oral health. The possible answers were 'good', 'moderate' and 'bad'. From all owners 60% of people think their pet's oral health status is good, 35% evaluate the condition to be moderate and 5% say the condition of the mouth is bad. Answers 'bad' and 'moderate' were grouped together when making a logistic regression analysis. This same assessment was performed in the studies by Aula (2018) and Hietakangas (2019). In the study of Aula (2018) they found that owners were able to evaluate their pet's oral health status reliably as the amount of pathologies found from the oral cavity of the pets by veterinarians on an awake examination agreed strongly with the assessment made by the owner. Table 5 shows the results of logistic regression model of associations between owner assessment of their pet's oral health and possible risk factors.

Table 5. Results of logistic regression model of associations between owner assessment of pet's oral health status (good or bad) and possible risk factors. Owerall 627 owners answers were used in the present analysis.

Variable	n	OR	95% CI	p-value
Species:				
Dog	488	1		
Cat	139	1.03	0.68; 1.56	0.894*
Age (year)		1.16	1.10; 1.22	<0.001
Clinic visit before due to oral problems:				
No	319	1		
Yes	308	1.99	1.39; 2.85	<0.001
Wish for more information:				
No	272	1		
Yes	355	2.00	1.40; 2.85	<0.001

n – number of animals, OR – odds ratio, CI – confidence interval
*Retained in the model as possible cofounders

It was studied how different variables (does the person own a dog or a cat, how old is the pet, has it visited veterinarian due to dental issues during the last year, has it visited veterinarian due to dental issues earlier than during the previous year, does the owner brush their pet's

teeth, does the owner wish to receive more information regarding dental health) relate to the evaluation of the pet's oral health status by the owner. It was discovered that the species of the pet has no effect on the oral health assessment by the owner. In this study we found that higher age of the pet had a strong association with poorer oral condition as evaluated by the owner (OR 1.16, 95% CI: 1.10-1.22, $p < 0.001$). If the pet had visited veterinary clinic previously due to oral/dental issues, the owner tended to assess the condition of the mouth to be poorer (OR 1.99, 95% CI: 1.39-2.85, $p < 0.001$). If the owner stated that they don't wish to get more information regarding pet's oral health they were also likely to assess the condition of their pet's mouth as better.

Even though 462 respondents assessed their pet's oral health as good, 43% (n = 418) answered that they have noticed calculus or plaque on the surface of their pet's teeth. Bad smell emanating from the mouth of their pet was recognized by 28% of pet owners. Only 14% has not noticed any abnormal findings and 2% has never looked in the mouth of their pets. This means that even though majority of the owners are aware of dental calculus and halitosis being abnormal, they still consider their pet's oral health to be on a good level despite those findings.

4.7. Veterinary practice visits due to dental/oral complaints

Questions about having visited a veterinary practice due to dental or oral concerns were asked. Of all pets 67% had not visited a veterinary clinic for the reason of dental/oral complaints during the last year. Visits at veterinary clinic due to dental/oral concerns during the last year were recorded in 33% of pets. During the last year, 31% of pets had had a professional dental treatment with general anesthesia performed.

A little more than one third, 36% of pets had a dental/oral-related clinic visits earlier than during the previous year. Almost one third, 30% of pets had had dental extractions performed at some time during their lives under general anesthesia.

4.8. Anesthesia free dental procedures

Luckily only 8% of pets were recorded to have experienced anesthesia free dental ‘cleaning’ during the last year and 12% had experienced it earlier than during the last year. Two animals had dental extractions performed on them while they were conscious.

5. DISCUSSION

There is no doubt that periodontal disease is sadly a part of daily life of the majority of pets. To prevent periodontal disease in the best possible way, owners should combine homecare with professional oral health assessment and treatment (COHAT) performed by a veterinarian. Studies have shown that the most effective way to prevent periodontal disease is to work against plaque and calculus formation. Active and passive homecare methods together with professional dental and oral treatment offered by a veterinarian are implementations the owners can use to keep their pet's oral health in good level.

This study showed that majority of pet owners are still not brushing their pet's teeth even though it is widely recommended by the professionals (Bellows et al., 2012; Niemiec, 2013; Harvey et al., 2015). Brushing the teeth is considered to be the golden standard of homecare but it involves the pet owners a lot and thus passive homecare is more popular way to take care of pet's oral health among pet owners.

Compared to Hietakangas (2019) results from Estonia, the Finnish results are better in regards of owners brushing their pet's teeth. In Estonia 2019 60% (n = 117) of dog owners were not brushing their dog's teeth with any frequency at all and in cats the number was 88% (n = 86) respectively. In this study 49% (n = 287) of Finnish dog owners and 72% (n = 121) of Finnish cat owners were not brushing their pet's teeth at all. Even if the differences between different countries and cultures may affect the results, it seems that people are starting to realize the benefits of tooth brushing. It seems that in Finland the owners are more often advised by external sources to brush their pet's teeth compared to Estonian owners. In Hietakangas study 32% of Estonian dog owners and 45% of Estonian cat owners state that they haven't gotten any advice to brush their pet's teeth. In Finland these percentages are 13% and 18% respectively. To get these numbers to decrease further, veterinarians should pay more attention to educating the owners about oral and dental homecare starting from the very first veterinary visits. Veterinarians should also pay attention to explaining why active homecare is so important and how it is implemented (Bellows et al., 2019). Somehow the pet owners should receive the message that brushing the teeth really is the most effective way to keep the pet's oral/dental health on high level. Even though 87% of Finnish dog owners agreed that brushing is the best prevention against gingival diseases, 53% are not brushing at any frequency. In the present Finnish study 24% of dog owners state that brushing is neither

necessary nor beneficial to the pet. In Estonian population study the proportion of these owners was smaller, 15% respectively. The biggest challenge is to motivate owners to act at home and incorporate the brushing in to their daily routine. Training pets to allow brushing is also one thing to keep in mind. In Estonia 23% of the dog owners and 21% of the cat owners told that their pet doesn't allow them to brush. These results in Finland were 14% and 46% respectively.

Complementary products were widely used in Finland in dogs, but many cat owners stated that they didn't even know that there are such products for cats. Dental treats and chews were the most popular product used for dogs as well as raw bones. Majority (86%) of Finnish dog owners stated that chews or treats are the complementary products they use most often. In Estonia this number was 91%. A couple of Finnish dog owners didn't compare raw bones to dental products but thought of them as a more natural way of taking care of their pet's teeth. 'The bones work as a natural cleaner of the teeth while the dog is enjoying chewing', stated one Finnish dog owner. Also the ones feeding raw bones seldom brush their dog's teeth as they believe it is enough that the teeth look clean after chewing bones. In the study by Allan et al. (2019) it was discovered that chewing bones is a good add-on together with brushing but dental chews are not effective enough alone. Many times pet owners are stressed because they are afraid of letting the veterinarians anesthetize their pets due to anesthesia related risks, but the risks of feeding raw meat and bones are often overlooked. Feeding raw meat and bones doesn't only contain risk factors regarding the pets but also to the persons handling the products. From the pet's point of view the risks of feeding raw bones and food are: damage to gingiva and teeth (Dourado Pinto et al., 2020), contact with several pathogens, mainly *Salmonella* species (Schlesinger and Joffe, 2011), constipation and intestinal or esophageal obstructions (Leib and Sartow, 2008), tongue entrapment (Rubio et al., 2010) as well as suffocation.

In this study we could not evaluate how well owners are aware of the real health status of their pet's mouth because with this online questionnaire no veterinary professional saw the animal after the owner's statement.

Hietakangas (2019) and Aula (2018) found that in Estonia, pet owners' theoretical knowledge was on a satisfactory level. Still, many times signs of periodontal disease are not noticed by the owners (Niemiec, 2008). In this study 18% of dog owners agreed that if there is no visible calculus present in the pet's mouth there are no pathologies. Among cat owners 22% agreed with the previous statement. In Estonia these numbers were 13% and 17% respectively. Luckily only 3% of Finnish dog owners and 5% of Finnish cat owners thought bad smell is

normal in a pet's mouth. In Estonia those percentages were almost doubled. Both Finnish and Estonian pet owners are well aware that a broken tooth needs veterinary consultation. In the study of Hietakangas (2019) one third of Estonian pet owners considered anesthesia-free dental procedures beneficial and safe, which is unfortunate since these procedures are able to clean only the visible surface of the teeth without any proper evaluation of the teeth and their attachment or subgingival cleaning (American Veterinary Dental College, 2018; Nemec et al., 2019). In the present study, 22.9% of Finnish pet owners believe that anesthesia-free dental procedures are safe and beneficial for their pet's oral health. As the removal of supragingival calculus alone is purely cosmetic and ineffective in treating disease (Bellows et al., 2019) and cleaning of gingival pockets of a conscious animal patient is basically impossible due to the unpleasantness and painfulness of the procedure, they provide the pet owners with a false sense of benefit to their pet's oral health. As stated before, these non-anesthetized procedures should never replace professional COHAT procedure that includes complete oral health assessment, sub- and supragingival dental scaling, polishing and intraoral radiographs (American Veterinary Dental College, 2018).

It is crucial for pet owners to get education from veterinary professionals to help them to recognize the signs of periodontal disease in their pets as these signs are often missed by them (Niemiec, 2008). As the owners' understanding of their pet's oral health improves it is possible that they begin also to realize the benefits of proper homecare and this would motivate them to start and keep on with brushing their pet's teeth. Also, especially in Finland, one source of motivation towards better preventative dental homecare may be the relatively high cost (as seen from the owner perspective) of dental procedures performed by a professional veterinarian, another motivating factor might be the possibility to reduce the need for anesthesia episodes experienced by their pet, as owners are often wary of anesthesia and related risks. A down side of this is that this may sway pet owners towards a seemingly 'easier' solution of using anesthesia-free oral procedures since visibly clean teeth give the false feeling of mouth free of pathologies to 18% of the pet owners according to this study. Again, owner education in this regard is of utmost importance.

Owners' assessment of the pet's oral health status was shown not to depend on whether the pet was a dog or a cat. People owning an elder animal tended to evaluate their pet's oral health to be worse than the owners having younger animals. This finding is logical since periodontal disease is more regularly seen in older animals (Stella et al., 2018). In this study there was no association between a tendency to evaluate oral health status to be worse and the pet having previous appointments at veterinary clinic during the last year due to dental

problems. In Hietakangas study (2019) Estonians tended to evaluate oral health to be worse with the pet having a history of previous clinic visits concerning oral health at any time in their lives. Finnish owners evaluated oral health status as better if their pet didn't visit a veterinary practice due to oral problems during the time earlier than last year. It might be that Estonian pet owners tend to bring their animal to veterinary clinic to treat the oral/dental problems that already exist, while Finnish pet owners have more commonly accepted preventative oral procedures to make sure the pet would not develop dental/oral problems. The owners who have no wish to gain more knowledge about oral health, tend to evaluate that their pet's oral health is good, these owners may lack understanding of the actual status of their pet's oral health.

Challenges of this study are unsupervised filling of the questionnaire, people understanding questions differently and the lack of professional evaluation of the oral health status of the pet compared to the owner's statements. As the pet owners were not identified by any way, it was impossible to regulate the amount of questionnaires filled by one person. Even though the questionnaire was available for six months, all the filled questionnaires were received during the first month of this time period.

It would be interesting to repeat this study after a couple of years and compare the answers. I would like to predict that veterinarians will continuously educate pet owners further regarding the oral health of their pets and thus it should correlate with 'better' results in many questions. Also, looking for associations between different characteristics of the owners and the evaluation of pet's oral health, as was done in Swedish study by Enlund et al. *(*2020), would be interesting. In the Swedish study men tended to evaluate their pet's oral health status to be better compared to women and owners having medical professions tended to evaluate the condition of their pet's oral health to be better comparing to owners not working on medical field.

CONCLUSIONS

This study was designed to gain information from Finnish pet owners about their knowledge regarding dental care of their pet dogs and cats and to compare those results with similar studies performed in Estonia during 2018 and 2019.
It seems that pet owners have a lot of knowledge regarding dental disease symptoms, procedures and homecare but the challenging part is actually bring this knowledge in to the real life and implement active oral/dental homecare of their pets into their daily routine. Pet owners like to do something to prevent dental problems, but majority is not willing to involve themselves too much.

Veterinarians are in a central role in educating pet owners within the field of their pet's dental health. Veterinary dentistry has developed remarkable over the decades and to make sure it keeps on developing and that we will achieve a balance more towards prevention than (often late occurring) treatment – as we also endeavor to do in other animal health areas, we need more and better training for veterinarians in the issues of pet oral health which in turn also increases passing knowledge to the pet owners. The real challenge is to educate people, pet owners and veterinarians both, effectively and furthermore to motivate them to brush their pet's teeth daily or at least every other day; or minimally, use passive methods of oral/dental homecare regularly and not disregard the necessity of regular professional veterinary attention to the oral cavity. Promoting scientifically proven methods and knowing the facts behind the recommendations are the best way to convince pet owners in doubt.

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APPENDICES

Appendix 1. Online questionnaire in Finnish

Tämä kyselytutkimus kerää tietoja koskien lemmikinomistajien asenteita, käytäntöjä ja toivomuksia koskien koirien ja kissojen suun ja hampaiden hoitoa. Kyselyn tuloksia tullaan käyttämään eläinlääkäriopiskelijan lopputyössä. Vastaamalla kyselyyn osallistutte tutkimukseen, jonka tulokset tullaan analysoimaan anonyymisti. Kyselyn täyttäjä antaa luvan tulosten keräämiseen ja mahdolliseen julkaisemiseen (esimerkiksi tieteellisessä julkaisussa). Vakuutamme, että sekä omistajan että lemmikin henkilökohtaisten tietojen ja vastausten käsittely toteutetaan yleistä tietosuoja-asetusta noudattamalla. Tutkimuksen tuloksia tullaan julkaisemaan ainoastaan yleispätevällä tasolla. Kiitämme tutkimukseen osallistumisesta!

Ella Tanhuanpää, kuudennen vuosikurssin eläinlääkäriopiskelija (Eesti Maaülikool)

Kadri Kääramees, Eesti Maaülikool pieneläinklinikan vanhempi eläinlääkäri

Identifiointi

Lemmikini on: Koira ___ Kissa ___ Ikä vuosissa _____
Paino: _____kg Kuntoluokka: Normaali ___ Alipainoinen ___ Ylipainoinen ___
Rotu: _____
Uros ___ Naaras ___
Leikattu ___ Leikkaamaton ___

Kysymykset omistajalle: Vastaa seuraaviin kysymyksiin yhden lemmikin osalta. Merkitse sopiva vastaus ympyröimällä vastausta vastaava kirjain tai täydennä oma vastauksesi tyhjälle riville. Jos useampi vastausvaihtoehto on sopiva, ympyröi ne kaikki.

1. Mikä on, oman kokemuksesi mukaan, lemmikkisi suun ja hampaiden terveydentila tällä hetkellä? (Yksi vastaus)

a. Hyvä b. Kohtalainen c. Huono

2. Oletko huomannut lemmikkisi suussa mitään seuraavista? (Yksi tai useampi vastaus)

a. Hengityksen epämiellyttävä tuoksu (halitoosi)

b. Hammaskiveä tai plakkia hampaiden pinnoilla

c. Ikenien punoitusta

d. Jotain muuta epänormaalia: _____

e. En ole katsonut lemmikkini suuhun

3. Onko lemmikkisi käynyt eläinlääkin vastaanotolla viimeisen vuoden aikana hammas-/suuvaivan tai epäillyn hammas-/suuvaivan vuoksi? (Yksi vastaus)

a. Kyllä b. Ei

4. Onko lemmikkisi käynyt eläinlääkin vastaanotolla aiemmin kuin viimeisen vuoden aikana hammas-/suuvaivan tai epäillyn hammas-/suuvaivan vuoksi? (Yksi vastaus)

a. Kyllä b. Ei

5. Onko lemmikillesi tehty kuluneen vuoden aikana hammashoitoa (hampaiden putsausta, hammaskivenpoistoa tms.) eläinlääkärin toimesta yleisanestesiassa (nukutettuna)? (Yksi vastaus)

a. Kyllä b. Ei

6. Onko lemmikillesi tehty aiemmin kuin kuluneen vuoden aikana hammashoitoa (hampaiden putsausta, hammaskivenpoistoa tms.) eläinlääkärin toimesta yleisanestesiassa (nukutettuna)? (Yksi vastaus)

a. Kyllä b. Ei

7. Onko lemmikiltäsi koskaan poistettu hampaita eläinlääkärin toimesta yleisanestesiassa (nukutettuna)? (Yksi vastaus)

a. Kyllä b. Ei

8. Onko lemmikillesi tehty kuluneen vuoden aikana ''hammashoitoa'' (hampaiden putsaus, hammaskivenpoisto tms.) ilman yleisanestesiaa? (Yksi vastaus)

a. Kyllä b. Ei

9. Onko lemmikillesi tehty aiemmin kuin kuluneen vuoden aikana ''hammashoitoa'' (hampaiden putsaus, hammaskivenpoisto tms.) ilman yleisanestesiaa? (Yksi vastaus)

a. Kyllä b. Ei

10. Onko lemmikiltäsi koskaan poistettu hampaita ilman yleisanestesiaa (nukutusta)? (Yksi vastaus)

a. Kyllä b. Ei

11. Harjataanko lemmikkisi hampaita sinun tai jonkun muun henkilön toimesta? (Yksi vastaus)

a. Kyllä, vähintään kerran päivässä
b. Kyllä, muutaman kerran viikossa
c. Kyllä, harvemmin kuin muutaman kerran viikossa
d. Ei, lemmikin hampaita ei harjata. Siirry kysymykseen 13.
e. Ei, aiemmin harjattii, mutta ei enää. Siirry kysymykseen 13.

12. Jos lemmikkisi hampaita harjataan, mitä kautta sait tietoa, joka motivoi sinua aloittamaan hampaiden harjaamisen? (Tämän jälkeen siirry kysymykseen 14.) (Yksi tai useampi vastaus)

a. Eläinlääkäriasemalta / Eläinlääkäriltä
b. Apteekista
c. Lemmikkitarvikeliikkeestä
d. Toisilta lemmikinomistajilta
e. Lemmikin kasvattajalta
f. Kirjallisuudesta
g. Televisiosta / Lehdistä
h. Internetistä
i. Muualta:

_____

13. Jos lemmikkisi hampaita ei harjata, miksi? (Yksi tai useampi vastaus)

a. Lemmikki ei anna harjata hampaitaan

b. Lemmikin hampaita ei harjata ajanpuutteen vuoksi tai se on mahdotonta omistajan fyysisen rasitteen vuoksi

c. Lemmikin hampaiden harjaus ei ole tarpeellista, eikä lemmikki hyödy hampaiden harjauksesta

d. Minua ei ole neuvottu harjaamaan lemmikin hampaita

e. Muu syy: _____

14. Annetaanko (ja kuinka usein) lemmikillesi erityisesti hampaiden ja suun terveyttä tukevia tuotteita (erikoisruuat, puruluut, ruokaan/juomaveteen lisättäviä aineita tms)? (Yksi vastaus)

a. Kyllä, päivittäin (Siirry kysymykseen 16.)

b. Kyllä, mutaman kerran viikossa (Siirry kysymykseen 16.)

c. Kyllä, harvemmin kuin muutaman kerran viikossa (Sirry kysymykseen 16.)

d. Ei, lemmikille ei anneta kuvattuja tuotteita

15. Jos ET anna lemmikillesi erityisesti hampaiden ja suun terveyttä tukevia tuotteita (erikoisruuat, puruluut, ruokaan/juomaveteen lisättäviä aineita tms), miksi? (Tämän jälkeen siirry kysymykseen 22.) (Yksi tai useampi vastaus)

a. Tuotteet eivät sovi lemmikilleni (eivät maistu tai aiheuttavat vatsavaivoja)

b. Näiden tuotteiden tarjoaminen lemmikille ei ole mielestäsi tarpeellista tai hyödyllistä

c. Minua ei ole neuvottu tarjoamaan näitä tuotteita lemmikilleni

d. Tuotteet ovat liian kalliita

e. Muu syy: _____

16. Minkäkälaisia, erityisesti hampaiden ja suun terveyttä tukevia tuotteita lemmikillesi annetaan? (Yksi tai useampi vastaus)

a. Suugeelit / -huuhteet

b. Juomaveteen lisättävät tuotteet

c. Ruokaan lisättävät tuotteet

d. Puruluut tai ´´hammasherkut´´

e. Erityisruokavalio (hammasterveys)

f. Jotain muuta: _____

17. Valitse hampaiden ja suun terveyttä edistävistä tuotteista se, jota lemmikkisi yleisimmin saa tai jota sille yleisimmin käytetään. (Yksi vastaus)

a. Suugeelit / -huuhteet
b. Juomaveteen lisättävät tuotteet
c. Ruokaan lisättävät tuotteet
d. Puruluut tai ´´hammasherkut´´
e. Erityisruokavalio (hammasterveys)
f. Jotain muuta:

_____
_____

18. Listaa ne hampaiden ja suun terveyttä edistävät tuotteet (tuotenimet), joita lemmikkisi on saanut tai sille on käytetty viimeisten kolmen kuukauden aikana.

_____
_____
_____

19. Mistä ostat hampaiden ja suun terveyttä tukevia tuotteita lemmikillesi? (Yksi tai useampi vastaus)

a. Eläinlääkäriasemalta / Eläinlääkäriltä
b. Apteekista
c. Lemmikkitarvikeliikkeestä
d. Ruokakaupasta
e. Nettikaupasta
f. Muualta:_____
_____

20. Mistä useimmin ostat hampaiden ja suun terveyttä tukevia tuotteita lemmikillesi? (Yksi vastaus)

a. Eläinlääkäriasemalta / Eläinlääkäriltä
b. Apteekista
c. Lemmikkitarvikeliikkeestä
d. Ruokakaupasta
e. Nettikaupasta
f. Muualta:

_____
_____

21. Mistä saadun tiedon perusteella valitset hampaiden ja suun terveyttä tukevat tuotteet lemmikillesi? (Yksi tai useampi vastaus)

a. Eläinlääkäriasemalta / Eläinlääkäriltä
b. Apteekista
c. Lemmikkitarvikeliikkeestä
d. Toisilta lemmikinomistajilta
e. Lemmikin kasvattajalta

f. Kirjallisuudesta
g. Televisiosta / Lehdistä
h. Internetistä
i. Mainoksista
j. Testaamalla lemmikin mieltymyksiä
k. Muualta:

_____
_____

22. Mistä saat tai etsit tietoa/neuvoja koskien lemmikkisi hampaiden ja suun hoitoa ja ongelmien ennaltaehkäisyä? (Yksi tai useampi vastaus)

a. Eläinlääkäriasemalta / Eläinlääkäriltä
b. Apteekista
c. Lemmikkitarvikeliikkeestä
d. Toisilta lemmikinomistajilta
e. Lemmikin kasvattajalta
f. Kirjallisuudesta
g. Televisiosta / Lehdistä
h. Internetistä
i. Muualta:

_____
_____

23. Mitä tietolähdettä pidät luotettavimpana ja todenmukaisimpana etsiessäsi tietoa tai saadessasi neuvoja koskien lemmikkisi hampaidenhoitoa ja suun terveyden ylläpitämistä? (Yksi vastaus)

a. Eläinlääkäriasema / Eläinlääkäri
b. Apteekki
c. Lemmikkitarvikeliike
d. Toiset lemmikinomistajat
e. Lemmikin kasvattaja
f. Kirjallisuus
g. Televisio / Lehdet
h. Internetistä
i. Jotain muuta:_____

24. Haluaisitko saada enemmän tietoa ja ohjeistusta koskien lemmikkisi hampaiden ja suun terveyden ylläpitämistä ja ongelmien ennaltaehkäisyä? (Yksi vastaus)

a. Kyllä b. Ei

25. Mistä tietolähteestä mieluiten hankit tietoa / otat neuvoja vastaan lemmikkisi hampaiden ja suun terveyteen liittyvissä asioissa? (Yksi vastaus)

a. Eläinlääkäriasemalta / Eläinlääkäriltä
b. Apteekista
c. Lemmikkitarvikeliikkeestä
d. Toisilta lemmikinomistajilta

e. Lemmikin kasvattajalta
f. Kirjallisuudesta
g. Televisiosta / Lehdistä
h. Internetistä
i. Muualta:
_____

Lue seuraavat väittämät huolellisesti läpi ja valitse mielestäsi oikea vaihtoehto

26. Koiran tai kissan suu on terve, jos hampaissa ei ole näkyvää hammaskiveä. (Yksi vastaus)
a. Kyllä b. Ei
27. On normaalia että koiran tai kissan hengitys **haisee pahalle.** (Yksi vastaus)
a. Kyllä b. Ei
28. Päivittäinen hampaiden harjaus on tehokkain tapa ehkäistä iensairauksia koirilla ja kissoilla. (Yksi vastaus)
a. Kyllä b. Ei
29. Murtunut hammas aiheuttaa ongelmia lemmikille ja omistajan tulisi aina konsultoida eläinlääkäriä näissä tapauksissa. (Yksi vastaus)
a. Kyllä b. Ei
30. Lemmikin hammaskivenpoisto, hampaanpoisto ja hampaiden putsaus ilman yleisanestesiaa (ilman nukutusta) on turvallista ja terveyttä edistävää. (Yksi vastaus)
a. Kyllä b. Ei

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